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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/707,036	11/06/2000	Jukka Vehmas	U 013044-9	9238

7590 09/16/2003

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EXAMINER

HUG, ERIC J

ART UNIT	PAPER NUMBER
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1731

DATE MAILED: 09/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/707,036	VEHMAS ET AL.	
	Examiner	Art Unit	
	Eric Hug	1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 8-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 16 is/are rejected.
- 7) ☒ Claim(s) 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 February 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The following is in response to the amendment filed on June 23, 2003.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

1. Claims 1-4 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKelvey (US 3,298,810) in view of Starr (US 4,059,426).

McKelvey discloses a system for heating glass sheets in a tempering apparatus. Pressurized heated gas is continuously introduced to a furnace, whereby the pressure inside the furnace is maintained at superatmospheric. Manifold 74, compressor 76, gas burner 80, and supply line 78 which delivers the pressurized heated gas to the furnace, are all located outside the furnace (see Figure 2). The system that supplies the pressurized heated gas may also include a recirculating conduit to reduce energy usage (see column 6, lines 44-50). The temperature of the heated gas is about 1130°F (about 610°C). The amount of pressure over the atmospheric pressure is not expressly disclosed, however it is clear from the disclosure of McKelvey that this overpressure must exceed the atmospheric pressure by at least more than 0.1 bar (standard atmospheric pressure is 1.013 bar). This is obvious that the pressure inside the furnace is much greater than atmospheric pressure, because the overpressure must be sufficient to prevent

Art Unit: 1731

sagging of the glass sheet as arranged (column 4, lines 60-65; column 5, lines 35-40) and to cause an outflow of gas from inside the furnace when the furnace is opened (column 5, lines 56-67). McKelvey does not expressly disclose the details of the recirculating conduit, except to say that it is included with the system for supplying the heated gas, therefore since the gas supply system is located outside of the furnace, so must be the recirculating conduit.

Starr discloses a furnace for heating glass sheets whereby hot furnace gases are internally recirculated. Starr is cited here to show that it is also well known to conserve energy by recirculating hot gases through a outside the furnace (see column 1, lines 22-42), whereby gases are conducted to and from the furnace through conduits leading to and away from the blowers. Although the furnace of Starr is designed to overcome problems with withdrawing gases from the furnace, nevertheless, Starr discloses that pressurizing heated air outside the furnace and recirculating it back into the furnace is well known. Thus, though McKelvey may be lacking in its disclosure of the details of the recirculating conduit, then Starr exemplifies that it is well known to have a compressor (blowers) and recirculating unit outside the furnace.

2. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKelvey in view of Starr as applied to claim 1 above, and further in view of LeTemps et al (US 4,773,926).

McKelvey discloses the furnace described above having a gas supply system and recirculating loop located outside the furnace. McKelvey does not teach the rotational speed of the compressors being greater than 15,000 rotations per minute, the velocity of the gas leaving the nozzles being higher than 50 meters per second, or the diameter of the holes in the nozzles being below 2.3 mm.

LeTemps teaches that it is well known to expel gas toward both surfaces of glass at supersonic speeds (greater than 50 meters per second) for quickly tempering the glass (column 5, lines 27-38; column 1, lines 40-45). LeTemps also teaches that the diameter of the nozzles is about 1.5 mm (column 4, lines 25-27). With regards to the compressor, to impart a supersonic speed of heated gas would require rotation of the compressor at a high speed. A rotational speed of at least 15,000 rotations per minute would have been prima facie obvious given the teaching of using supersonic speed and in view of *In re Boesch*, 205 USPQ 215 (CCPA 1980) (the discovery of an optimum value of a known result effective variable without producing any new or unexpected results is within the skill of the routineer in the art), where the rotational speed of the compressor is a result effective variable that governs the flow of heated gas to the furnace. It would have been obvious to one skilled in the art to combine the teachings of LeTemps with McKelvey to temper glass sheets of various thicknesses in the furnace of McKelvey, since the teachings of LeTemps provides for a more rapid and energy efficient means of tempering glass sheets within the furnace (see column 2, lines 20-25; column 3, lines 19-26 of LeTemps), resulting in higher sheet productivity.

Allowable Subject Matter

Claim 17 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The claim is allowable primarily because the prior art does not disclose or suggest a method of heating glass as disclosed by claims 1 and 2 and further comprising using separate compressors supplied with air sucked from the furnace with each compressor having respective pressures blowing air independently onto the upper and lower surfaces of the glass.

Response to Arguments

Applicant's amendments have overcome the rejections under 35 U.S.C 112, 2nd paragraph set forth previously.

Applicant's amendments and arguments have overcome all rejections under 35 U.S.C 102(b) and 35 U.S.C. 103(a) set forth previously.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nitschke (US 4,397,672) discloses a glass sheet tempering system comprising a quench chamber supplied with pressurized quenching air. Spent quenching air is removed from the quenching chamber, then subsequently cooled and pressurized by a constant volume compressor before being fed back to the quench chamber. The compressor may be located inside (see column 4, lines 35-48) or outside the quench chamber. The pressure of the compressed air is at least 10 psi (0.69 bar) over atmospheric pressure.


New grounds of rejection are presented that were not necessitated by amendment to the claims. Therefore, this action is non-final.


Art Unit: 1731

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Hug whose telephone number is 703 308-1980. The examiner can normally be reached on Monday through Friday, 9:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 703 308-1164. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-0651.


jeh


STEVEN P. GRIFFIN
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